

ANDRZEJ PAWELEC
Kraków

NETWORK MODELS: AN ASSESSMENT

Keywords: linguistic categories, network models, polysemy, prototype semantics, radial categories

Abstract

This article – based on a larger study (Pawelec 2009) – has two aims. The more limited one is to present network models proposed by Ronald Langacker and George Lakoff. I try to show that both ventures rest on manifestly different assumptions, contrary to the widespread view that they are convergent or complementary. Langacker's declared aim is "descriptive adequacy": his model serves as a global representation of linguistic intuitions, rooted in convention. Lakoff, on the other hand, offers a developmental model: a fairly general abstract schema is "imagistically" specified and transformed, while the more specific schemas serve as the basis for metaphorical transfers. My wider aim is to offer a preliminary assessment of theoretical justifications and practical potential of network models in lexical semantics.

1. Introduction

In a more comprehensive work (Pawelec 2009), I offered a case study of prepositional polysemy, as represented in selected network models. The present article – based on the book – summarizes some basic issues underlying network modelling and attempts an assessment of its theoretical justifications and practical potential. If the observations presented below seem sketchy, I can only refer the reader to the account mentioned (it is to be understood, however, that my approach is exploratory throughout: my aim is to probe rather than pass verdicts).

The label "network models" is used here as a shorthand expression for the cognitive approach to the representation of lexical "senses" sometimes called "prototype

semantics" (e.g. Kleiber [1990] 2003). The term is borrowed from computational attempts to represent semantic knowledge, which constitute a related field (on relations between "concepts", as opposed to linguistic "senses", cf. Evens 1988). Network models in the meaning investigated here constitute a family of formats for representing polysemy. Since cognitive linguistics (henceforth, CL) views lexical and grammatical categories as a continuum and explains both in semantic terms, such networks normally cross standard morphosyntactic boundaries.

This general description of the field requires some comment. When stating that network models represent lexical "senses", one takes for granted the standard position adopted in lexical semantics: words have distinct meanings which can be ascribed to them out of the context of use. It is assumed both in the new cognitive paradigm, as well as in the more traditional schools (neostucturalist and generativist ones), to which it is usually opposed, that words have "senses" which can be analysed in isolation. Without this assumption, arguably central for the very existence of lexical semantics, "the rationale for distinguishing lexical from sentence / utterance semantics would evaporate" (Zlatev 2003: 454).¹ Thus, the distinction reveals a gap between word senses, as represented out of context, and their meanings in use (or construals).

The assumption that words – or, more generally, conventional linguistic units (henceforth, CLU), e.g. nominal cases – have senses may lead in several directions. One could ask, first, about the nature of polysemy, i.e. the processes which result in the proliferation of a CLU's senses. Second, one could enquire about the diagnostic criteria of a CLU's polysemy, especially in view of the proposed distinction between semantic "senses" and pragmatic "construals". Third, a linguist could be primarily interested in offering the most adequate way to represent the sense(s) of various CLUs. These issues are clearly intertwined. I will focus on the last one, as it provides a convenient vantage point on the genesis and goals of network modelling, while the remaining ones will be touched upon when appropriate.

2. The rationale behind network models

There are alternative justifications of this venture provided by the "founding fathers" of prototype semantics – George Lakoff and Ronald Langacker.

Lakoff's declared aim is incredibly ambitious and extends far beyond the domain of linguistics. He wants to provide an alternative to "the traditional view" about the nature of language, mind and reality (which he calls "objectivism"),

which is tied to the classical theory [of categorization, according to which] categories are defined in terms of common properties of their members (Lakoff 1987: xii).

¹ It is not obvious to what extent Zlatev's formulation covers some dynamic approaches to lexical meaning, which treat word meanings out of context as e.g. "pre-meanings" (Croft, Cruse 2004: 97ff.) or "parameterised lexical concepts" (Dunbar 1991: 112ff.), since such theoretical constructs require actualization to get some specific content. In such cases the postulated distinction between "senses" and "construals" is problematic.

The theory of prototypes (developed to a large extent on the basis of Eleanor Rosch's work) is to serve as a lynchpin of a new view, bringing forth a revolution in philosophy and science. Wider implications of Lakoff's proposal go far beyond the present context [I analysed that ideological project (Pawelec 2005)].

As concerns language, in his *opus magnum* Lakoff says:

One of the principal claims of this book is that language makes use of our general cognitive apparatus. If this claim is correct, two things follow:

- Linguistic categories should be of the same type as other categories in our conceptual system. In particular, they should show prototype and basic-level effects.
- Evidence about the nature of linguistic categories should contribute to a general understanding of cognitive categories in general. Because language has such a rich category structure and because linguistic evidence is so abundant, the study of linguistic categorization should be one of the prime sources of evidence for the nature of category structure in general (Lakoff 1987: 58).

It seems that Lakoff merely *assumes* that linguistic categories are like “other categories in our conceptual system” and are structured around prototypes, or “radially structured”. Additionally, he treats prototype (radial) models in semantics as evidence for the existence of prototype-based categorization (a linguist's fallacy). As he puts it:

polysemy appears to be a special case of prototype-based categorization, where the senses of the word are the members of a category. The application of prototype theory to the study of word meaning brings order into an area where before there was only chaos [...] and] demonstrates the reality of radially structured categories (Lakoff 1987: 378–9).

As I will try to show, both claims are not just overstated, but simply false: earlier analyses of polysemy did order the linguistic data in useful ways (although at a higher level of abstraction), while the radial format is not an unambiguous improvement; what is more, a new format of representation is merely a new way of approaching phenomena: it does not prove the reality of proposed entities and relations, while its adequacy must be tested against competing accounts.

Langacker, on the other hand, notices in a matter-of-fact fashion that:

Much in language is a matter of degree. [...] Nondiscrete aspects of language structure must be accommodated organically in the basic design of an adequate linguistic theory (Langacker 1987: 14).

He subsequently raises the issue “whether the criterial-attribute model or the prototype model offers a better account of linguistic categorization”. As he explains:

The criterial-attribute model characterizes a class by means of a list of defining features (conventionally represented in square brackets – A.P.); in its strict form, it requires that every member of the class fully possess every property on this list, and that no nonmember possess all of the listed properties. Class membership is thus an all-or-nothing affair; a sharp distinction is presumed between those entities that are in the class and those that are not.

Langacker points out three “well-known problems” with this model. First, some indubitable members of a category may lack attributes intuitively judged criterial for it (e.g. flightless birds). Second, a set of features sufficient to delimit a category, i.e. “to pick out all and only the members” of a class, “might still be incomplete and inadequate as a characterization of that class” (e.g. “[featherless] [biped]” as defining humans). And third, in actual use the criterial attributes are not judged necessary to ascribe class membership. For instance, a baseball which is the wrong colour is still called a baseball. According to Langacker, the prototype model avoids these problems. First,

it does not require that every member of a category possess a given feature (or even that there be any salient property shared by all members).

Second,

the characterization problem is avoided because the prototype model is not inherently minimalist in spirit; instead it encourages the fullest possible characterization of prototypical instances, if only to specify the basis for assimilating the full range of nonprototypical instances to a category.

And third,

the prototype model allows an entity to be assimilated to a category if a person finds any plausible rationale for relating it to prototypical members (Langacker 1987: 14–17).

Thus, Langacker’s preference for prototype models is based on the assumption that the criterial-attribute model is not adequate for representing linguistic phenomena.

Both accounts are superficially similar – in proposing prototype models in preference to discrete models in semantics – while being different in important respects. Crucially, Langacker’s view that linguistic categories may require special treatment because of “the organization and complexity of the linguistic data” (Langacker 1987: 17) seems opposed to Lakoff’s assumption that they are like “other categories in our conceptual system” (Lakoff 1987: 58). Furthermore, Langacker’s approach is primarily descriptive: in his view, the prototype model provides a more adequate representation of a range of linguistic phenomena than the criterial-attribute model. Lakoff believes that the prototype model is explanatory: that it shows how language and mind work. Consequently, Langacker’s aim is to overcome some limitations of the structuralist representations of CLUs, while Lakoff (inexplicably) offers his radial model as a representation of conceptual structures.

The notion of “linguistic categorisation” plays a central but rather opaque role in the remarks quoted above. Taylor, who used the phrase as the title of his book (the first monograph presenting prototype approach in CL), pointed out its ambiguity. Whenever we use the same word to refer to various specimens of something, we categorize, or name “sameness in difference” (Taylor 1989: vii). Since words can refer to linguistic entities, “linguistic categorisation” may be not only about categories

pointed out verbally in the world, like DOG, but also about linguistic categories, like WORD or LEXEME. To distinguish between these cases, in the latter one, which Taylor calls “reflexive” (Taylor 1989: viii), Rúa proposes to talk about “metalinguistic categories” (Rúa 2003: 46).

Let us notice, however, that this disambiguation does not seem to address the crucial issue. When Langacker mentioned the problem facing the linguist: “the organization and complexity of linguistic data”, he did not mean linguistic categories like WORD or LEXEME, but rather linguistic phenomena, e.g. polysemous words with a number of conventional meanings. While it makes sense to use the term “metalinguistic categories” to refer to folk (e.g. WORD) or expert (e.g. LEXEME) categories in some ways ordering linguistic data, this description does not seem obviously applicable to the data. In his exposition, Taylor disregards this point since he assumes (together with Lakoff) that linguistic objects are like non-linguistic objects:

Just as a botanist is concerned with a botanical categorization of plants, so a linguist undertakes a linguistic categorization of linguistic objects. The second half of the book, in particular, will address the parallels between linguistic categorization in this second sense, and the categorization, through language, of the non-linguistic world. If, as will be argued, categories of linguistic objects are structured along the same lines as the more familiar semantic categories, then any insights we may gain into the categorization of the non-linguistic world may be profitably applied to the study of language structure itself (Taylor 1989: viii).

Rúa takes Taylor to task for treating what she calls “metalinguistic categories” on a par with other kinds of categories. She claims that linguistic categorisation proper involves objects which are “intrinsically” linguistic, rather than “additionally” linguistic. As she explains:

In simple terms, one thing is categorizing objects which have a concrete or abstract correlate in the world, and subsequently resorting to language in order to express the result of that categorization [...]; a different thing is categorizing objects which lack this correlate, or simply do not make sense in isolation from the system they belong to (i.e. from language) (Rúa 2003: 32).

Consequently, Rúa postulates three types of “linguistic categories” (a superordinate, neutral term):

- (a) Metalinguistic categories (purely linguistic): they must be assigned a linguistic expression;
- (b) Semilinguistic categories: they are subdivided into *cognitive linguistic* (*bird*) and *perceptual linguistic* (*red*), since the latter type is highly dependent on sensory perception. Their linguistic expression is expected as a natural complement;
- (c) Extralinguistic categories (purely cognitive/perceptual): their linguistic expression is possible but not strictly required (Rúa 2003: 33).

Rúa’s classification seems to be rather *ad hoc*. It is quite obvious, for instance, that what would be an “extralinguistic” category in one language, could be a “semi-

linguistic” one in another, if conventionally expressed (rich evidence is provided by studies in the domain of colour perception and expression). But her point is consonant with Langacker’s concern: “purely linguistic” categories – linguistic phenomena – may have unique properties which require special treatment. Still, the term “metalinguistic categories” is an unusual label for “natural” linguistic categories (as opposed to reflexive metacategories). Rúa (2003: 33) is aware of this problem: “there are problematic cases of difficult ascription (what kind of ‘objects’ are categorized under *over* or *hate*?)”, she wonders (I termed such “objects” CLUs – I will return to their status later). It is legitimate to ask, then, in what sense linguistic objects – e.g. polysemous words – are “categories”? What is their “sameness in difference”?

To sum up, both Langacker and Lakoff call into question the classical categorial approach to linguistic phenomena (specifically, polysemy), as practised by previous structuralist schools (“autonomous semantics”). Lakoff does it in the name of a revolutionary theory of categorization and concept formation which he inferred from Rosch’s experiments on “prototype effects” (contrary to her own position on their significance), and has been applying with his associates to several disciplines (cf. Lakoff 1996; Lakoff, Turner 1989; Lakoff, Johnson 1999; Lakoff, Núñez 2001). Langacker’s guiding principle is descriptive adequacy. In his treatment of linguistic categorization he points out some aspects of phenomena which have not been captured by earlier theorists.

3. What are linguistic categories?

As we have seen, the issue of categorisation looms large in the justifications behind network modelling. Lakoff is opposed to the “classical” view that the aim of categorisation is to find a unique place for each entity (its category) in an overall taxonomy (a hierarchy of categories). Following Aristotle, to define something is to find its *genus proximum* (the closest type it belongs to) and to point out its *differentia specifica* (its distinguishing features). This is a properly theoretical task: one is after a transparent and comprehensive account of relations between entities. Lakoff, on the other hand, believes that categories are embodied: they reflect recurrent types of experience (and subsequent conceptual extensions).

Rather than criticise Lakoff’s views (cf. Pawelec 2005), let me point out in the present context a crucial difference between the theoretical quest for a rational description of reality and practical attempts to make sense of it, to “domesticate” it conceptually. In his attack on classical categories, Lakoff overlooks this basic distinction: between “expert” and “folk” categorisation, between the theoretical and the pragmatic stance to phenomena. Prototype effects studied by Rosch (e.g. whether a chair or an ashtray is a better example of the category FURNITURE) do not reflect theoretical judgements; they are symptoms of a pragmatic need for cognitive reference points in everyday life and communication. Consequently, they do not pose a challenge to the classical theory.

We may notice that Langacker, in his criticism of the criterial-attribute (or “classical”) model quoted above, commits related errors. His first argument – that “some indubitable members of a category may lack attributes intuitively judged criterial for it” – ignores the distinction between folk and expert categories (“intuitively criterial” refers to a folk assessment, while experts search for necessary and sufficient criteria). The second argument misrepresents the nature of expert categorisation: its aim is not a unique description of a class but locating the class in a taxonomy (as in Aristotle’s definition). The last argument mistakenly assumes that theoretical definitions of word “senses” should be taken to determine their meanings in use, or “construals”.

Once we see that there is nothing wrong, in principle, with classical categories, let us ask about the “sameness in difference” of linguistic categories, specifically polysemous CLUs. I will follow Langacker’s account. In his treatment of linguistic categorisation he points out two crucial aspects of phenomena, which must be taken account of: variability and conventionality. Since CLUs are generally variable both in form and meaning, he thinks it is best to analyse their phonological and semantic poles as “complex categories”. These categories are complex because “they group together, and treat as equivalent for certain purposes, a variety of distinct and sometimes quite disparate elements”. As a result, “membership is commonly a matter of degree, resistant to strict delimitation, and subject to the vicissitudes of linguistic convention” (Langacker 1987: 369–370).

It is important to realize that Langacker’s description (of the semantic pole) refers to the internal structure of a complex category. The ascription of an element to a complex category is unproblematic, as it is based on its form (if one discounts the issue of homonymy, when historically different word forms converge or happen to be identical). Thus, the sameness in question is of a genetic kind, as in a family: some individuals bear the same name, because they come from the same stock or belong to a single family tree. Consequently (to invoke terms used by logicians), the “extension” of a family name – the class of referents covered by it – is normally not problematic, as it is guaranteed by convention (assuming one can keep track of historical relatedness and knows the rules of exclusion and inclusion, e.g. adoption²). Linguists, however, are primarily concerned (in the case investigated here) with the “intension” of a lexeme: its meaning / set of related meanings. By definition, a polysemous lexeme (called “a complex category” by Langacker) comprises a set of different senses, thus – apparently – it cannot have one intension. It is not a symbolic unit as defined by Langacker (a form / meaning pair), since it unites a more or less fuzzy set of formally identified symbolic units (which I termed a CLU).

To sum up, a polysemous lexeme is a category extensionally: as a set of genetically related, formally homogeneous symbolic units – a “natural category” of

² Adoption provides an analogy to the convergence of historically different word forms (homonymy). If they converge because language users see a similarity between their senses, then the distinction between polysemy and homonymy is no longer secure.

senses.³ Intensionally, it is unlikely to be a category. There is no obvious “sameness in difference” when one juxtaposes e.g. two senses of *game*: 1. a sport; 2. animals hunted for fun (a metonymical extension of 1.). A very general, disjunctive definition: “ACTIVITIES performed / ANIMALS hunted for fun” is not informative and it cannot delimit a category (except perhaps one borrowed from Borges).

4. Approaching polysemy

Let us return now to our initial question: what is the most adequate way for a linguist to tackle the polysemy of a CLU? Three general answers have evolved, which may be termed the homonymy, polysemy and monosemy position. As pointed out by Lewandowska-Tomaszczyk, the monosemy position (espoused by neostructuralists) strives for the most parsimonious or schematic representation (a single sense), while the homonymy position (associated with generativists) is primarily concerned with deriving (any number of) senses from sets of matrices of linguistic properties (Lewandowska-Tomaszczyk 2007: 152). Thus, both approaches apparently disregard the phenomenon of polysemy, or natural (historical, conventional) relatedness of senses of a CLU – for different reasons (I will return to the polysemy position at the end of this section, and I will present it in detail in the subsequent one).

Since generativists are concerned with the necessary conceptual “underlying reality of language” (cf. Katz 1971), they are not interested in the historical (contingent) relatedness of senses. Using combinations of atomic properties, they represent actual / posited senses primarily not as related, but as partially opposed to each other. This approach is based on the structuralist assumption that a finite set of distinctive features is enough to characterise all existing (and imaginable) senses. Hence, a rational model is to be preferred to a historical reconstruction. One may point out, however, that this Platonic view of language notoriously results in a neglect of its surface manifestations.

The motivation for the monosemy position is more complex and important because it goes back to the original statement of the structuralist agenda by Saussure, who was concerned to define a properly linguistic object of study. Saussure argued for a synchronic approach to language, as opposed to then prevalent diachronic approach. What are the grounds for a linguist to focus on language as a state? First, since a succession of historical developments “does not exist insofar as the speaker is concerned”, a linguist “can enter the mind of speakers only by completely suppressing the past” (Saussure 1959: 81). Saussure clearly assumes that the “reality” of language is in the present state of the mind of its speakers and that it must be captured without reference to past states. He also argues that the opposition between the synchronic and the diachronic view “is absolute and allows no compromise”, since individual changes become operative only when integrated into the system

³ The term is Lakoff’s (1987: 418) but in his use “natural” refers to purely psychological or conceptual relationships, which are devoid of a historical and social dimension (cf. Pawelec 2009: 70–71, note 28 for a critique).

(Saussure 1959: 83). Second, the system of language is based on the synchronic notion of “value”, as illustrated by a comparison with chess:

Take a knight, for instance. By itself is it an element in the game? Certainly not, for by its material make-up – outside [...] the game – it means nothing to the player; it becomes a real, concrete element only when endowed with value and wedded to it. Suppose that the piece happens to be destroyed or lost during a game. Can it be replaced by an equivalent piece? Certainly. Not only another knight but even a figure shorn of any resemblance to a knight can be declared identical provided the same value is attributed to it. We see then that in semiological systems like language, where elements hold each other in equilibrium in accordance with fixed rules, the notion of identity blends with that of value and *vice versa* (Saussure 1959: 110).

This analogy shows that a material entity (a knight in chess or a phonic sequence in language) gets a specific meaning only in a field of relations with other elements: there are no atomic meanings (contrary to the generativist reinterpretation of structuralism). Once it acquires its identity, the material shape is secondary – it can be replaced by something else – as long as the system remains operative.⁴ Thus, value and identity of elements are inextricably linked. In this way we get to the notion of “the unity of the sign”, which is crucial in our context:

Without language, thought is a vague, uncharted nebula. There are no pre-existing ideas, and nothing is distinct before the appearance of language [...]. The characteristic role of language with respect to thought is not to create a material phonic means for expressing ideas but to serve as a link between thought and sound, under conditions that of necessity bring about the reciprocal delimitations of units. Thought, chaotic by nature, has to become ordered in the process of its decomposition. Neither are thoughts given material form nor are sounds transformed into mental entities; the somewhat mysterious fact is rather that “thought-sound” implies division, and that language works out its units while taking shape between two shapeless masses (Saussure 1959: 112).

Thus, language is “the domain of articulations” – each unit is an “*articulus*”, a member, a subdivision in a larger sequence (Saussure 1959: 112–113). From this point of view, Saussure argues that the nature of material used for symbolizing is secondary (whether phonic or gestural, as in sign languages), since “what is natural to mankind is not oral speech, but the faculty of constructing a language, i.e. a system of distinct signs corresponding to distinct ideas” (Saussure 1959: 10). Once an idea is articulated, one may talk of “pairing” between material and conceptual chunks (as in “nomenclaturism”), while language is primarily a structured system of differences.

In this way we get to the most difficult point: “in language there are only differences *without positive terms*” (Saussure 1959: 120; emphasis in the original).

⁴ Presumably (as minimal requirements in the chess context), the new material entity must differ in form from other elements and the changes cannot be too numerous. If we apply this perspective to language, we can see that formal oppositions – crucial in a genetic context – lose much of their importance in further history, once they are integrated into the system.

The “pairings” specify “significations”, i.e. concepts which may refer to something in the world. However, this most obvious function of linguistic units is founded on their more basic differentiation. They may get to mean something only when integrated with existing units *as opposed to them in some respects* within a system of such oppositions: “In language, as in any semiological system, whatever distinguishes one sign from others constitutes it” (Saussure 1959: 121). Consequently, Saussure defined the “linguistic point of view” as an attempt to capture the system of oppositions which underlies the use of a language, while not being directly influenced by all its uses and vagaries. As pointed out by a commentator: “[the whole array of Saussurean concepts] has a common aim: to separate the linguistic point of view from any direct relationship with the ‘real’ world” (Normand 2004: 104). To sum up, for Saussure, the essence of language lies in the *combination* of sound and thought – not “pairing” (which produces “nomenclature”, or a list of words) but “reciprocal delimitation”. Consequently, the sign can be a vehicle of meaning – in the system of oppositions – only if it preserves this unity (one-to-one relationship between *signans* and *signatum*). Hence, apparently, the justification for the monosemy position.

Let us notice, however, that the notion of “the unity of the sign” seems necessary only in some primary genetic context: a new sign (morpheme) cannot arise without a simultaneous double articulation of its phonic and semantic poles in their respective fields of differences. Once a sign is established, it enters into relations with other signs and can be put to extended uses. For instance, if the name of an animal is conventionally applied to humans, that sign contracts relations with signs denoting human activities. Thus, a sign may transform / develop its identity (or spawn related signs, to stick to the family analogy) without any modulation of the phonological pole – the source of polysemy. This can be detected in the linguistic system by inspecting the range of its syntagmatic relationships. Consequently, one may argue that the notion of “the unity of the sign” is preserved, but at a more complex structural level: “the new sign” is revealed in all those syntagmatic units which carry the modified sense.

Against this background, one may point out a difference between the monosemy and the polysemy positions. The former one looks for internal, systematic reasons to distinguish signs. Since a given phonic sequence is a *prima facie* reason that one deals with a single sign (discounting historical homonymy), the monosemy position reflects a reluctance to view any specific range of syntagmatic relationships as indicative of a new sense. Those ranges which have a clearly different formal status within the system will be treated in this way, e.g. *mother* as a noun and as a verb. But otherwise one will try to cover with a single intension (definition) as many instances as possible. Only those cases which resist such unifying efforts are assumed to merit the status of a new sign – distinguished by its syntagmatic potential (thus, not in contravention of “the unity of the sign” principle).

The polysemy position, as represented by CL, adopts an external view on linguistic structure as symptomatic of prior cognitive processes. It is motivated both by apparent inadequacies of structuralism and by the conviction that language is a window on conceptual structure.

5. Representing polysemy: Langacker vs. Lakoff

Langacker argues for a nonreductive, usage-based model of symbolic meaning: even though a theorist rightly aims at a generalization, s/he should not eschew enumerating established senses covered by it, since they belong to a speaker's knowledge of linguistic convention. As he says about a lexical item:

Even when all its attested values are plausibly analyzed as instantiations of a single abstract schema, or as extensions from a single prototype, there is no way to predict from the schema or prototype alone precisely which array of instantiations or extensions – out of all the conceivable ones – happen to be conventionally exploited within the speech community (Langacker 1987: 370).

Specifically, Langacker opts for a “unified” account which “requires the listing of all conventionally established values of a lexical item, as a minimal description of the empirical data”. The next step is “an analysis of how the category is structured, i.e. how the different senses are related to one another”. There are two principal types of relationship to be accommodated in the model: “elaboration (the relation between a schema and its instantiations) and extension (the relation between prototypical and peripheral values)”. The resulting network model “incorporates (as schemas) whatever generalizations can be extracted from specific instances and reflects the many categorizing judgments through which the complex category has evolved”. Thus, Langacker's network model of a complex category comprises two kinds of categorisation – by schema and by prototype – “as aspects of a unified phenomenon” (Langacker 1987: 370–371).

Langacker also comments on the notion of a lexical item:

To the extent that a semantic network with common symbolization approximates a coherent category, we can reasonably speak of a lexical item. Despite its convenience, however, this construct is more a descriptive fiction than a natural unit of linguistic organization. Not only is coherence inherently a matter of degree, but also the definition allows a single network to be divided into lexical items in multiple and mutually inconsistent ways. I regard this as a realistic characterization of the phenomena in question (Langacker 1987: 388).

As opposed to Langacker, Lakoff does not provide a general discussion⁵ of the structure of “natural categories of senses” (Lakoff 1987: 418). He states, however, what a representation of such categories requires from an analyst:

1. One must provide a representation for the central subcategory and representations for each of the noncentral subcategories, since there are no general principles that can predict the noncentral cases from the central case.
2. A theory of *motivation* is required, since the noncentral subcategories are neither arbitrary nor predictable from the central subcategory.

⁵ As he says: “I generally prefer not to engage in methodological discussions and would rather just get on with my work” (Lakoff 1990: 39).

3. A theory of the types of links between the central and noncentral subcategories is required.
4. [...] an adequate account of these links requires an experientialist theory of meaningful [*sic*] thought and reason" (Lakoff 1987: 379).

In standard use, Lakoff's expression "natural categories of senses" would be probably understood diachronically as historically related families of senses (an extensional definition). However, since his declared goal is "psychological reality", the relatedness in question refers not to historical, but to psychological links. For Langacker, "cognitive reality" means something quite general: that a given model of linguistic usage should be in agreement with noncontroversial psychological assumptions. Lakoff, however, invokes a speculative notion of "image schema",⁶ which in his model serves the role of the central or prototypical schema (an abstract definition, a relatively unspecified concept), while all nodes are related to it by various mental links. Thus, his model of linguistic usage is not supposed to be merely in agreement with some general psychological operations (e.g. abstraction, comparison); it is supposed to be a hypothesis about a real-life generation of meanings prior to language (linguistic convention merely provides labels for some results of independent psychological processes).⁷

As concerns the representation of polysemy, Lakoff offers an abstract schema (prototype), which is subsequently specified along a number of dimensions. A set of resulting schemas (images, concepts) give rise to further schemas via certain hypothetical mental transformations. In essence, Lakoff's radial model is based on a set of features (in that respect it is similar to the generativist approach) and it involves mental transformations represented mostly in an imagistic way. Thus – in a striking opposition to Langacker's account – it is focused on "the underlying reality of language", rather than on its surface manifestations.

Langacker offers a format for attested senses which is flexible enough to capture any meanings (construals). Since he aims at an adequate description of available linguistic material, he is far from basing his account on any pre-linguistic structures, transformations or transfers (even though he does accept in general that concepts are prior to a linguistic expression and conventionalization). His "schemas" are constructed on the basis of actual lexical extensions as opposed to Lakoff's image-

⁶ Developed in some detail by Johnson (1987). Despite suggestions to the contrary by Lakoff and others, image schemas have a completely different function within his theory than Langacker's schemas in his network model, cf. Tuggy (2007) on schemas, and Oakley (2007) on image schemas. Tuggy summarises the aspects of image schemas which draw Lakoff's attention:

their constant recurrence, their basis in bodily experience and thus their direct meaningfulness, their gestaltish nature (Lakoff 1987: 272), their "preconceptual structuring" (292–93), their universality in human experience (302, 312), and their ubiquity in language use (272) [thus] for Lakoff, image schemas are "central truths" (296) (Tuggy 2007: 85).

⁷ As expressed by Lakoff and Johnson: "A portion of the conceptual network of battle partially characterizes the concept of an argument, and the language follows suit" (Lakoff and Johnson 1980: 7).

schemas, which are supposed to underlie any extensions (whether they are expressed in a language, or not).

As for the prototype, Lakoff's model develops from the centre in various directions (apparently, to reach attested senses). His choice of an unspecified schema as the category prototype seems to be required by the format: it would be a much more demanding task (if not an impossible one) to derive a set of divergent meanings from a more specific schema. Langacker avoids the problem of the category prototype. In his format any schema motivating extensions is a prototype: categories have as many prototypes as proposed extensions.

At this stage, let me briefly return to the problem signalled before: what is the nature of a linguistic category (a CLU)? I have already pointed out that both Taylor's and Rúa's terms ("reflexive" and "meta-", respectively) do not go to the heart of the matter. Their proposals make some sense because they point to a central feature of relevant phenomena: since linguistic items are used to categorise (in the folk rather than expert meaning of the term), a category of such items is somehow a second-level entity. Can one make this any clearer?

If a term is a particular "take" on a state of affairs (*signatum* or concept), then a polysemous CLU is a set of formally and genetically related "takes" on a variety of situations. When one asks about "sameness in difference" of such a category, one tries to find some commonality in such continuous acts of "taking". We could call this commonality the "expressive potential" of a linguistic item, realized by a linguistic community in its history. From this point of view, a linguistic category is "reflexive", but not in the "meta-" sense, i.e. its make-up is not the result of some external ordering (e.g. a theory). It is reflexive because acts of extension are judged to be continuous with some previous "takes". The element of judgement is contextual: an innovative speaker accepts (*post factum*) that the symbolic form she has used conveys well her intention in given circumstances. The birth of a new "sense" is the result of a more general acceptance of the form's particular expressive application.

Against this background, one can point out that neither Langacker, nor Lakoff are interested in the historical development of the expressive potential of a CLU. Langacker declares to be concerned with "cognitive reality" – semantic connections established by contemporary speakers. From this perspective, a network model is an imaginative reconstruction of potential semantic links between established "senses". It is "imaginative", since Langacker openly declares that "cognitive reality" can be modelled only "in principle", rather than "in fact":

although the precise configuration of the network is variable [from speaker to speaker – A.P.] and even indeterminate, the need to postulate some type of network is seemingly beyond dispute (Langacker 1988: 135).

Lakoff, on the other hand, offers a theoretical reconstruction of potential semantic links based on the assumption (in the case of *over*) that a fairly indeterminate "image schema" can be "imagistically" specified and transformed, while the results can be metaphorically extended.

6. An assessment of network modelling

When one aims to model semantic structures (whether psychological, or social, or logical), one works on the basis of contemporary intuitions. Any such model will reflect our present grasp of semantic relations: either in an active mind solving some problems, or in the intersubjective domain – the conventional world of a linguistic community⁸ – or in an abstract conceptual system. Consequently, following Saussure's position, network models should aim to represent contemporary intuitions concerning the relatedness of lexically available senses. To be sure, one could try to see how such a system works in individual minds (psychology) or whether it can be formalised (logic), but the point of network models is to show in a transparent way what is socially available – what the linguistic system offers its users.⁹ From this perspective, it is imperative to distinguish “attested senses” from nonce uses or contextual construals (or social *langue* from individual *parole*).

The CL characterisation of the difference between both levels in terms of “cognitive salience”, “entrenchment” or “sanction” is inadequate, since those terms do not properly capture the social dimension. Individual “cognitive salience” or “entrenchment” do not count for much in intersubjective spaces: one must be able to rely on some senses as *available* to the other party. “Sanction” sounds closer to the mark; still, it is not enough to claim that some meanings serve as schemas for elaborations or as points of departure for extensions (Langacker's account). Attested senses actually give structure to our common world and to discourse, while Langacker's format seems designed for an abstract conceptual space, divorced from any role in structuring reality.

Following Saussure's account, one must ask, however, whether language users have intuitions concerning the *relatedness* of senses. Since they use language, they know what words mean in a context; they will also say whether creative uses make sense to them. They cannot normally provide “definitions”, except for rudimentary statements concerning the “type” or “function” of an entity (“it is a kind of...”, “it is for...”). They will say that two uses are different when they bring to mind sufficiently distant or distinct situations. To give an example, the verb *tease* has four sub-entries in a dictionary:

- (1) To laugh at someone and make jokes in order to have fun by embarrassing them;
- (2) To deliberately annoy an animal;
- (3) To deliberately make someone sexually excited without intending to have sex with them; (4) (AmE) To comb your hair in the opposite direction to which it grows, so that it looks thicker (*Longman Dictionary* 2003).

⁸ Or Saussure's “social mind”. Cognitivists normally find such holistic notions unacceptable as “metaphysical” (cf. Talmy 1995). Of course, “social mind” is a metaphor but it rightly suggests that a linguistic community relies on an intersubjectively available semantic system (which cognitivists try to reconstruct atomistically, on the level of individual minds).

⁹ Historical uses can be integrated into such models – e.g. *kluka*, *kluczka* in Tabakowska's model of KLUCZ / KEY (1995: 51) – since one can try to “revitalize” any words (i.e. to connect them conceptually to “live” senses). To be “socially available”, however, they must be felt to structure reality.

The last sense is clearly distinct and highly specific. Sense (2) could seem – in general – not distinct from (1), if one did not know that “teasing” animals takes quite specific forms (e.g. enraging them with a stick), which normally express an altogether different attitude than (1).¹⁰ Sense (3) seems least distinct to a Polish speaker, possibly because this “situation type” – even if equally common – is not elaborated on in the intersubjective sphere (while in English there are related expressions, e.g. *striptease*). It seems, then, that two uses are sufficiently distinct when they are felt to structure some domains differently in a socially available way. The example of “calendar month” and “four week month” – according to Croft and Cruse, possibly two closest ambiguous senses (Croft, Cruse 2004: 115) – seems to confirm this formulation, since they provide two different “recipes” for social activity.

Consequently, the transfer of a sense to a different *objective* domain is not enough to get a distinct sense, e.g. one can *play* with a child or with a dog; one can *tease* a child and a dog in sense (1). *Teasing* in sense (2) refers to a different *kind* of activity (which may be also applied to interpersonal relations) rather than to a different objective domain. Crucially, this type (*tease* 2) is not just “conceived” as a possibility – it is actually “perceived” as a socially recognized situation. Once we accept this, we can easily discount putative cases of polysemy, like *eating* “with a spoon, fork, chopsticks etc.”, since they all refer to the same kind of activity (performed with different tools). To conclude, a distinct sense brings to mind a different *situation type* because it has helped to structure it. Situation type is the third element or rather the basis on which the Saussurean articulation is founded.

When we return now to the relatedness of distinct senses, we can see, perhaps, why the entries for *tease* are ordered in the way proposed by lexicographers: sense (4) – apart from the fact that it is a regional variety – is most strongly embedded in a highly specified situation type; sense (3) – less so, and so on. One can imagine, perhaps, societies in which (2) would be more popular¹¹ than (1) – in such a case, it could serve as the “default” use out of context. On this basis, one can speculate that the intuitive relatedness of senses is linked to the intuitive order of situation types, or their *social salience*.

As concerns the development of such complex categories, this is a social, historical process of establishing common perspectives. It involves extended uses of words, which tend to cluster around referentially salient specimens. Astronomical *star* and celebrity *star* – since both are currently salient – provide good reference points for related uses. The extension from the astronomical to the celebrity sense is normally classified as a metaphor and explained as an analogical use, e.g. ‘as a star catches one’s attention in the sky, so an actor catches the attention of the public’.

¹⁰ The difference is lexicalized in Polish: *przekomarzać się* (‘tease 1’) as opposed to *drażnić* (‘tease 2’), which suggests ‘courting danger’.

¹¹ It may seem that frequency of occurrence normally correlates with social salience. One can imagine, however, that *tease* 3 is statistically the most popular activity of all four, while not being salient because of some social prohibitions. *Tease* 4, even if generally performed on a daily basis, would be always less socially salient than (1)–(3) because of its relatively minor social status (as long as one’s hair-do is perceived as less important than one’s attitude to people or animals).

This explanation is a *hysteron proteron* one: it is based on our present intuitions, partly shaped by the existence of the sense in question. When pressed, however, we could imagine a number of different scenarios underlying this extension. What is more, since a lexeme normally carries many senses, several of them can usually serve as a point of departure for a given extension. Additionally, idiosyncratic extensions (reflecting particular circumstances of use, rather than socially recognized functional and structural similarities) sometimes “make it” into general use. Historical vagaries cannot be really “explained”, as they often exemplify situational serendipity or groping in the dark or confabulation. Thus, diachronic evidence rarely provides a clear-cut or unique motivation in single cases. What it does offer is some sense of the complexity of the process – involving an interplay of form, content and background – as well as some patterns of development.

More specifically, when one views a perspicuous representation of a complex category – e.g. KLUCZ / KEY (Tabakowska 1995: 51) – one notices that the contemporary central sense took over this role at some point in history. There are two earlier clusters: UNPREDICTABLE MOVEMENT, as exemplified by *kluczenie* (‘disguising one’s tracks’, ‘moving in circles’) and CURVED OBJECT, as exemplified by *kluka* (‘a curved rod’). Both are linked by the idea of “curvature”, which brings to mind unpredictability or devious behaviour. With the passage of time, a range of items expressing “deviousness” and “curvature” fell into abeyance, and the idea of “providing access” took central stage.¹²

Since the developmental history of a complex category is hidden from view of language users (and, as a rule, not completely transparent even to experts), the intuitive relatedness of senses apparently reflects social salience of situation types co-structured by a given lexeme. As the example of *tease* suggests, however, it is much easier to point out local senses – structuring narrowly defined or marginal situations – than to offer a convincing argument for one central sense among a number of candidates, or for a hierarchy of extensions. From this vantage point it is easier to understand the futility of attempts to justify on some theoretical grounds the priority of one sense of *over* (Lakoff 1987) or to distinguish “in a principled way” a set of distinct senses (cf. Tyler, Evans 2003). The senses are distinguished intuitively, on the basis of our everyday orientation in situation types.

At this point, we can perhaps better see the continuity between the structuralist monosemy position and the cognitivist polysemy position: the former one abstracts from the vagaries of language in use (*parole*) and aims to accommodate all situational applications to the most general sense/s one can posit; the latter one accepts the general senses (prototypes), while trying to trace their extensions on the basis of various psychological assumptions. Since both schools distance themselves from historical reality, they do not appreciate the situational embeddedness of a CLU’s polysemy.

¹² It seems that other lexical items “took over” some senses expressed by this category, e.g. one of the senses of *kluczka* is expressed by contemporary *mieć haka na kogoś* (‘to have a hook against sb’, cf. the entry *klucz* in Brückner’s dictionary). To be sure, ‘deviousness’ is still present in some uses.

Thus, even though both foundational network models offer rather different accounts of meaning extension – Lakoff bases his model of *over* on an unspecified “imagistic” schema, which is subsequently specified in several (largely arbitrary) dimensions and transformed according to hypothetical mental rules; Langacker offers a highly flexible format based on schematic similarity, underlying both specifications of a schema and extensions from a prototype – neither of the models is presented as “diachronic”, while both authors invoke “psychological reality” (in a rather different meaning of the term) as their declared goal. Moreover, Langacker points to “descriptive adequacy” as his primary aim and is at places quite confusing about the synchronic status of the model (cf. Łozowski 1999 for a critique).

My conclusion at this stage is perhaps entirely predictable. Since historical processes involve an *interplay* of formal structures, conceptual structures and the background, they cannot be properly represented by formats focused primarily on conceptual structure, even if these are offered as “dynamic”, as underlying real developments (if not in history, then certainly in mental life and in discourse). Still, if the formats are found useful by linguists (as seems evident and as has been partly documented), they should allow them to capture a “summation” of historical processes from a particular angle.

Generally speaking, Langacker’s format seems more promising in this respect, since it posits few formal requirements. As such – in skilful hands – it can be used to represent functional clusters and their intuitive conceptual unity from the present perspective. Lakoff’s model may also be found inspiring, since it invokes pragmatic factors (mostly of a perceptual kind), which are obviously operative in history. This conclusion may come as a denouement, but the fact that a new type of format has been proposed (as an alternative to the criterial-attribute analysis) could be in the long run more significant than the actual justifications offered for it.

To conclude, network models exemplify a search for linguistics with “a human face”. CL, within which they were developed, extended research horizons after Chomsky’s formalist approach, while being rooted in the mentalistic background (common to the first and the second generation cognitive science). Thus, network models represent the relatedness of lexical senses on the basis of some general or speculative psychological constraints and intuitively evident conceptual relations. The amount of work performed within the cognitive paradigm testifies to the intellectual potential of this approach.

References

- Croft W., Cruse D.A. 2004. *Cognitive linguistics*. Cambridge.
 Dunbar G. 1991. *The cognitive lexicon*. Tübingen.
 Evens M.W. (ed.) 1988. *Relational models of the lexicon. Representing knowledge in semantic networks*. Cambridge.
 Johnson M. 1987. *The body in the mind*. Chicago.
 Katz J. 1971. *The underlying reality of language*. New York.
 Kleiber G. 2003. *Semantyka prototypu. Kategorie i znaczenie leksykalne*. [1990: *La sémantique du prototype. Catégories et sens lexical*. Paris]. Kraków.

- Lakoff G. 1987. *Women, fire, and dangerous things. What categories reveal about the mind*. Chicago, London.
- Lakoff G. 1990. The Invariance Hypothesis: is abstract reason based on image-schemas? – *Cognitive Linguistics* 1.1: 39–74.
- Lakoff G. 1996 *Moral politics*. Chicago.
- Lakoff G., Johnson M. 1980. *Metaphors we live by*. Chicago.
- Lakoff G., Johnson M. 1999. *Philosophy in the flesh*. New York.
- Lakoff G., Núñez R. 2001. *Where mathematics comes from*. New York.
- Lakoff G., Turner M. 1989 *More than cool reason*. Chicago.
- Langacker R. 1987 *Foundations of cognitive grammar*. [vol. I *Theoretical prerequisites*]. Stanford, CA
- Langacker R. 1988. A usage-based model. – Rudzka-Ostyn B. (ed.) *Topics in cognitive linguistics*. Amsterdam, Philadelphia: 127–161.
- Lewandowska-Tomaszczyk B. 2007. Polysemy, prototypes, and radial categories. – Geeraerts D., Cuyckens H. (eds.) *The Oxford handbook of cognitive linguistics*. Oxford, New York: 139–169.
- Łozowski P. 1999. Panchrony, or linguistics without synchrony. – Lewandowska-Tomaszczyk B. (ed.) *Cognitive perspectives on language*. Frankfurt am Main: 23–35.
- Normand C. 2004. System, arbitrariness, value. – Sanders C. (ed.) *The Cambridge companion to Saussure*. Cambridge: 88–104.
- Oakley T. 2007. Image schemas. – Geeraerts D., Cuyckens H. (eds.) *The Oxford handbook of cognitive linguistics*. Oxford, New York: 214–235.
- Pawelec A. 2005. *Znaczenie ucieleśnione. Propozycje kręgu Lakoffa*. Kraków.
- Pawelec A. 2009. *Prepositional network models. A hermeneutical case study*. Kraków.
- Rúa, P.L. 2003. *Birds, colours and prepositions. The theory of categorization and its applications in linguistics*. München.
- Saussure F. de 1959. *Course in general linguistics*. New York.
- Tabakowska, E. 1995. *Gramatyka i obrazowanie*. Kraków.
- Talmy L. 1995. *The cognitive culture system*. Duisburg.
- Taylor J. 1989. *Linguistic categorization. Prototypes in linguistic theory*. Oxford.
- Tuggy D. 2007. Schematicity. – Geeraerts D., Cuyckens H. (eds.) *The Oxford handbook of cognitive linguistics*. Oxford, New York: 82–116.
- Tyler A., Evans V. 2003. Reconsidering prepositional polysemy networks: The case of *over*. – Nerlich B. et al. (eds.) *Flexible patterns of meaning in mind and language*. Berlin, New York: 95–159.
- Zlatev J. 2003. Polysemy or generality? Mu. – Cuyckens H. et al. (eds.) *Cognitive approaches to lexical semantics*. Berlin: 447–494.

Dictionaries

- Brückner A. 1927. *Słownik etymologiczny języka polskiego*. Kraków.
- Longman Dictionary = 2003. *Longman Dictionary of Contemporary English*. Harlow.